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WATER POLLUTION SURVEY

of the

VILLAGE OF WINCHESTER

COUNTY OF DUNDAS

1965

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VILLAGE OF WINCHESTER - 1965
COUNTY OF DUNDAS

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Report on a water pollution
survey of the village of
Winchester in the county of
Dundas.

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ONTARIO WATER RESOURCES
COMMISSION

Report on a
WATER POLLUTION SURVEY
of the
VILLAGE OF WINCHESTER

in the
COUNTY OF DUNDAS

Division of Sanitary Engineering
1965

WATER POLLUTION SURVEY

of the

VILLAGE OF WINCHESTER

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Report on a
WATER POLLUTION SURVEY
of the
VILLAGE OF WINCHESTER

INTRODUCTION

A water pollution survey of the Village of Winchester was performed during July, 1965. Surveys of this type are performed by the Ontario Water Resources Commission for the purposes of locating and recording sources of existing and potential water pollution. Recommendations are made concerning the abatement of these sources to the parties concerned.

In this report, reference is made to various surveys previously conducted by the OWRC. The sample results obtained during some of these surveys are utilized also. The appendices to the report include a tabulation of the results of samples taken from the local watercourses and drainage ditches, a list of the various storm sewer outlets to the ditches and watercourses, and for reference, a map of the Village of Winchester showing the sample point locations.

OFFICIALS CONTACTED

Assistance was received from the following officials:

Mr. C. R. Robinson, Clerk, Village of Winchester;
Mr. G. H. Reynolds, Reeve, Village of Winchester;
Mr. R. Freeland, Works Supt., Village of Winchester;
Mr. H. Lennex, Winchester Works Department;
Mr. J. A. Mullineux, Chief Public Health Inspector,
Stormont, Dundas and Glengarry Health Unit.

PREVIOUS SURVEY AND RECOMMENDATIONS

A water pollution survey was carried out by the OWRC in May of 1962 in the village. The report revealed a prevalence of sewage disposal problems in the village. Numerous municipal storm sewers were conveying inadequately treated sewage flows to the local tributaries with adverse effects resulting thereto. It was recommended that the practice of discharging inadequately treated sewage flows to the watercourses within the village be discontinued. It was also recommended that the solution to these sewage disposal problems would be the extension of municipal sanitary sewers to serve sections of the municipality where adequate private facilities could not be provided.

VILLAGE OF WINCHESTER

General

The Village of Winchester is located in the County of Dundas, approximately five miles south of the northern boundary. Highways No. 31 and No. 43 extend through the village as a common roadway. According to the 1965 Municipal Directory, Winchester's assessed population is 1,431.

Water Supply

Constructed and financed as an OWRC project, the municipal water works was put into operation in 1959. Water is obtained from two wells. Chlorination as well as treatment for taste and odour control is provided. A third well is presently

being drilled near the community park.

Surface Water Drainage

Surface water drains by way of the municipal storm sewers and ditches to local tributaries of the East Castor River. The main tributary within the community is designated on the appended map as NRE. This tributary rises south of the community and extends north-easterly through the east central portion of Winchester. Near Clarence Street, a diversion of the creek extends northward across Main Street and eventually veers east to rejoin the Castor River tributary in the extreme north-eastern section of the municipality. The direction of flow in both of these tributaries is sometimes vague due to low flows and the choked aspect of the stream bed. Restricted flows were noted in most of the small watercourses due to weed growth and accumulations of sediment and debris in the stream bottoms.

Another tributary of the East Castor River which is designated on the appended map as NREW rises west of Highway 31 north of Winchester and flows easterly past the municipality. Some local storm sewer run-off as well as waste flows from the Ault Milk Products Limited plant are carried to this tributary by way of ditches.

There are many storm sewer outfalls to the watercourses in the village. The sewers are generally six-inch clay tiles which discharge into the culverts carrying the watercourses underneath

the various streets, therefore, making the outfalls inaccessible. Although samples were not collected from these outfalls they are noted on the appended tabulation sheet as well as the map.

Sewage Disposal

Private

Due to the absence of extensive municipal sanitary sewers, sewage disposal is generally effected by private septic tank systems. The local health unit supervises new installations of this type. It is obvious that many instances exist where the inadequate private sewage disposal systems result in the discharge of sewage flows to the storm drainage system and thence to the watercourse.

Municipal

Due to the need for improved sewage disposal facilities at the Winchester District Memorial Hospital, a joint sewage works project between the OWRC and the municipality was effected by the construction of sanitary sewers and a sewage lagoon. To date, the sewage works has been extended to serve approximately eight commercial and public buildings, and thirty private residences.

The sewage works system consists of sanitary sewers, a sewage pumping station located on Ottawa Street approximately 600 feet north of Main Street, and a 3,550 foot forcemain leading to the municipal sewage lagoon. The lagoon is located on a 25 acre fenced tract of land which is situated approximately 3,000

feet from the village in part of Lot 5, Concession VII, in the Township of Winchester. The total lagoon surface area is 12 acres; however, due to low sewage flows only half of the area is utilized. This is accomplished by employing a dyke. At the time of this survey, there was no overflow from the pond.

Industry

The principal industry in Winchester is Ault Milk Products Limited. This milk processing plant manufactures various milk products including butter, skim milk powder, skim milk, evaporated milk, and cream. It is located in the north-central section of Winchester and employs approximately 40 persons. Water is obtained from the municipal supply, with augmentation by a well. Approximately two million gallons per month and 45,000 gallons per day are obtained from the municipal supply and the well respectively.

The industrial wastes from this plant, which include cooling water, wash water, milk vapours and whey, are discharged to an open ditch which flows in a northerly direction from the plant to the East Castor River tributary. This waste disposal method has resulted in numerous complaints of alleged pollution of the local tributary by these wastes. Spray irrigation is presently being considered as an alternative waste disposal method.

Two other industries in Winchester are the H.S. Lannin Lumber Company, and the Parcoll Limited Company which manufactures plastic awnings. Apparently, there are no resulting liquid

industrial wastes from these industries.

Refuse Disposal

For refuse disposal, a site located one and one-half miles east of the village on Concession Road VI, Winchester Township, is employed. This site is maintained for use both by the village and the Township. The open dump method is employed with the refuse being burned regularly and occasionally covered with fill.

No problems have been reported concerning any effects which this operation might exert on water quality.

SAMPLING PROCEDURE

Samples were collected from the local tributaries and ditches. Due to the general inaccessibility of the storm sewer outfalls, the direct outfalls were not sampled.

Bacteriological examination and sanitary chemical analyses were performed at the Ontario Water Resources Commission Laboratory with the exception of two samples. The bacteriological samples collected on July 29, 1965 from the Ault Milk Products industrial waste discharge and from the watercourse downstream from the discharge were submitted for analyses to the Ontario Department of Health Laboratory at Ottawa.

INTERPRETATION AND SIGNIFICANCE OF LABORATORY RESULTS

The analyses employed in this investigation to assess the quality of discharges and surface waters were biochemical oxygen demand (BOD), solids, and the enumeration of coliform organisms.

Biochemical Oxygen Demand (BOD)

The BOD of sewage, industrial wastes, or polluted waters, is the oxygen required during stabilization of the decomposable organic or chemical material by aerobic biochemical action. A 5-Day BOD determination with incubation at 20° C is recorded. A high BOD is indicative of organic or chemical pollution. The BOD of a watercourse should not exceed 4 parts per million (ppm).

Solids

The analyses for solids include tests for total, suspended, and dissolved solids. The results are reported in parts per million. The first test measures both the solids in solution and in suspension. The suspended solids indicate the measure of undissolved solids of organic or inorganic nature in suspension. Land erosion, sewage and industrial wastes are significant sources of suspended solids. Suspended solids in water can cause difficulties associated with water purification, and might result in depositions in streams which can interfere with the habitat of aquatic life. The dissolved solids are a measure of these solids in solution.

Coliforms

The coliform count is employed to obtain an enumeration of coliform organisms. The presence of coliforms indicates pollution by human or animal excrement or by some non-faecal forms. It is the opinion of the OWRC that the presence of coliforms in a

watercourse should not exceed 2,400 organisms per 100 millilitres (ml.) of water. The membrane filter technique was used in the bacteriological examination of water samples submitted to the OWRC laboratory, and the number of coliforms is reported per 100 ml. of the sample. The Ottawa Regional Health Laboratory utilized the most probable number (MPN) method to provide an index of the number of coliform organisms per 100 cubic centimetres of the water sample.

POLLUTION SOURCES INDICATED BY SAMPLE RESULTS

Although the individual storm sewer outfalls were not sampled separately, the very high BOD, solids, and coliform contents of the samples collected from the tributaries receiving these discharges indicate that numerous storm sewers convey inadequately treated sewage flows to the local tributaries of the East Castor River. Due to the low flow in these tributaries, and the choked nature of stream beds, the sewage lies in pools at various points throughout these watercourses.

The industrial waste discharge from the Ault Milk Products Limited plant is the major pollution source to the northerly tributary of the East Castor River. This is indicated by the adverse results of samples collected at sample point number NREW 64.2-DI and NREW 64.0. During this survey, the stream displayed completely septic conditions resulting in the associated adverse conditions of foul odours and scum on the water surface.

SUMMARY

The results of this survey indicate the main sources of pollution within the Village of Winchester to be the municipal storm sewer outfalls and the discharge from the Ault Milk Products Limited plant. Officials of Ault Milk Products are proceeding with corrective measures for industrial waste disposal. Although some progress is being made in connecting various buildings and dwellings to the municipal sanitary sewers, it is evident that the sewage works facilities should be extended to serve the majority of the village.

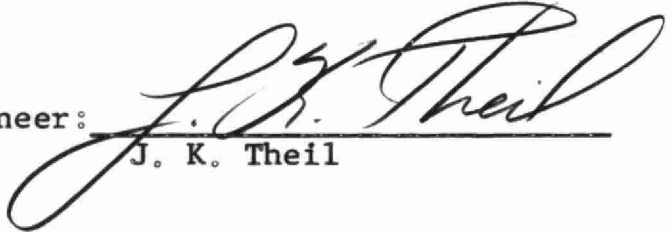
RECOMMENDATIONS

Inadequately treated sewage flows should not be discharged to the local watercourses. The program of extending the municipal sanitary sewers throughout the village should be accelerated as much as possible.

Officials of the Ault Milk Products Limited plant should continue their endeavour to provide adequate industrial waste disposal facilities.

All of which is respectfully submitted,

District Engineer: _____


J. K. Theil

Approved by: _____

J. R. Barr, Director,
Division of Sanitary Engineering.

Prepared by: M. M. Holy
/mh

RESULTS OF SAMPLES COLLECTED FROM LOCAL WATERCOURSES

<u>Sample Point No.</u>	<u>Description</u>	<u>Date</u>	<u>Coliforms per 100 ml.</u>	<u>5-Day BOD</u>	<u>S O L I D S</u>		
					<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>
NRED 64.86	Improved ditch on the north side of Main St.E. - drains to East Castor River tributary	July 28/65	35,000,000	245	964	52	912
NRED 65.0	Improved ditch at the intersection of Mill and Cable Streets	July 28/65	22,000,000	350	2042	204	1838
NRE 64.7	East Castor River tributary at Main St.E. - Concession Rd. 6-Winchester Twp.	Aug. /62	178,000				
		Oct. /63	75,000	18	778		
		Aug. 11/64	1,700,000	180	1682	304	1378
		July 28/65	147,000,000	530	2322	902	1420
NRE 65.3	East Castor River tributary at Hwy. 31 south end of Winchester	May 8/62	410	2.9	396		
		July 28/65		NO FLOW			
NREW 64.0	Winchester Branch of East Castor River at Concession Rd. 7- Winchester Twp.	Aug. /62	12,000,000	195	946		
		Oct. /63	430,000,000	1220	2860	714	2146
		Aug. 11/64	600,000	1300	3764	1052	2112
		June 15/65	14,000,000	4100	6998	4990	2008
		July 29/65	(11,000+MPN)	2000	3206	856	2350
NREW 64.2-DI	Ditch carrying industrial wastes from the Ault Milk Products plant to the East Castor R. tributary north of Winchester	May 19/61	191,000	2280	1886	454	1434
		June 15/65	6,800,000	1900	2952	1210	1742
		July 29/65	(11,000+MPN)	2500	2890	278	2612
NREW 64.6-D	Municipal ditch at Gladstone St. flowing to East Castor River tributary north of Winchester	July 28/65	18,600,000	560	1646	210	1436

RESULTS OF SAMPLES COLLECTED FROM LOCAL WATERCOURSES (cont'd)

<u>Sample Point No.</u>	<u>Description</u>	<u>Date</u>	<u>Coliforms per 100 ml.</u>	<u>5-day BOD</u>	<u>S O L I D S</u>		
					<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>
NREW 64.8-D	Municipal ditch on the north side of Main St. west of Whitney St. flowing to the East Castor River tributary north of Winchester	July 28/65	386,000,000	2400	3890	2408	1482

MUNICIPAL STORM SEWER OUTFALLS TO EAST CASTOR RIVER
TRIBUTARY (INCLUDING 1 PRIVATE OUTFALL) - outfalls

inaccessible

NRED 64.75-W	Storm sewer outfall to improved ditch at Ottawa Street
NRED 64.8-W	Storm sewer outfall to culvert carrying improved ditch under Minto Street
NRED 64.88-W	Storm sewer outfall to culvert under Main Street - north side
NRED 64.88-W-2	Storm sewer outfall to culvert under Main Street - south side
NRED 64.95-P	Private drain outfall to improved ditch - west side of Mill Street
NRED 65.0-W-1	Storm sewer outfall to culvert under Cable Street - north side
NRED 65.0-W-2	Storm sewer outfall to culvert under Cable Street - south side
NRED 65.08-W-1	Storm sewer outfall to culvert under Victoria Street - north side
NRED 65.08-W-2	Storm sewer outfall to culvert under Victoria Street - south side
NRE 64.7-W	Storm sewer outfall to culvert under Main Street - east end of village
NRE 65.0-W-1	Storm sewer outfall to culvert under Clarence Street - north side
NRE 65.0-W-2	Storm sewer outfall to culvert under Clarence Street - south side
NRE 65.05-W	Storm sewer outfall to culvert under York Street
NRE 65.2-W	Storm sewer outfall to culvert under Fred Street
NRE 65.3-W	Storm sewer outfall to culvert under St. Lawrence Street south

MUNICIPAL STORM SEWER OUTFALLS (cont'd)

NREW-D 64.6-W Storm sewer outfall to ditch at the north end of Gladstone Street

NREW-D 64.8-W-1 Storm sewer outfall to ditch at north side of Main Street - west end of village

NREW-D 64.8-W-2 Storm sewer outfall to ditch - Clarence Street west

